

MOSQUITO STUDIES (Diptera, Culicidae)

XXII. A NEW SUBGENUS AND SPECIES OF AEADES

FROM ARIZONA¹

by

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In June 1969, John F. Burger of the University of Arizona sent a single female of a very unusual mosquito with a mesonotal pattern superficially similar to that of *Aedes aegypti* to John N. Belkin at the University of California at Los Angeles. The specimen had been collected in the Coyote Mountains, Pima County, Arizona, by Martha L. Noller, also of the University of Arizona. Several members of the "Mosquitoes of Middle America" project staff examined the specimen and concluded that it was an undescribed species of *Aedes* so distinct from other known New World forms that it should probably be recognized at the subgeneric level. From the highly ornamented nature of the adult it was surmised that the immature stages would be found in treeholes or rockholes. After both Mr. Burger and Miss Noller kindly provided additional information about Mendoza Canyon, where the mosquito had been taken, and furnished directions for getting to the area, I visited the region and collected for a few days during the first week in September 1969. Although mosquito larvae and pupae were collected from numerous treeholes and rockholes and many biting adult mosquitoes were caught, the new form was not found. In late December 1969, Lewis T. Nielsen of the University of Utah and I revisited Mendoza Canyon and collected water and debris from a large number of treeholes. The material which we gathered was divided and portions of it were reared at the University of Utah and portions at the University of California at Los Angeles. Although no specimens of the unusual new species were recovered from the material reared in Utah, 2 males and 3 females with associated larval and pupal skins were reared in Los Angeles from eggs taken from an oak treehole by Dr. Nielsen. Study of these additional specimens, particularly the immature stages and males, supports the original conjecture that this new species should be placed into a separate subgenus of *Aedes*. The new subgenus, *Abraedes*, is briefly diagnosed and the species, *papago*, is fully described below.

The limited material presently available does not permit preparation of slides of adults and, consequently, no drawings of adult morphology are presented here. It is hoped that such drawings can be included in a future revision of the New World treehole and rockhole *Aedes*.

¹Contribution from project "Mosquitoes of Middle America" supported by U.S. Public Health Service Research Grant AI-04379 and U.S. Army Medical Research and Development Command Research Contract DA-49-193-MD-2478.

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I am grateful to John N. Belkin for his counsel in the preparation of this paper. I thank William A. Powder for help in the rearing and preparation of specimens, L. Margaret Kowalczyk for preparation of the preliminary and final illustrations and Caryle Abrams for typing the preliminary drafts and the final copy for litho-printing. It is a pleasure to acknowledge the invaluable help of John F. Burger and Martha L. Noller of the University of Arizona and Lewis T. Nielsen of the University of Utah; without their cooperation, as noted above, the present study would not have been possible.

ABRAEDES, new subgenus

TYPE SPECIES: *Aedes* (*Abraedes*) *papago*, n.sp.

FEMALE. Highly ornamented; integument of head and thorax dark brown to black, strongly contrasting with yellowish to amber integument of abdomen.

Head: Eyes broadly separated above antennae, the space with broad flat silvery scales. Decumbent scales of vertex broad and flat. Erect scales of vertex few in number. Proboscis conspicuously longer than forefemur. Palpus short, 0.26-0.29 length of proboscis; apparently 4-segmented. Antenna subequal to proboscis in length.

Thorax: Long rows of acrostichal and dorsocentral bristles present. Mesonotum with narrow scales; dark with conspicuous pattern of white and silvery lines superficially similar to that of *Aedes aegypti*. Scutellar lobes with patches of large broad flat silvery scales. Paratergite moderately broad; with broad flat silvery scales in lower anterior portion. Pleural bristles absent on lower *mep*, few on *stp*. Pleuron with broad flat silvery scales in small dense patches or lines.

Legs: Disproportionately short. Tarsi conspicuously marked with white bands or rings. Claws simple.

Wing: Plume scales present on dorsum of veins R_s , R_{2+3} , R_2 , R_3 , middle 0.60-0.70 of M and sometimes apical portion of 1A.

Abdomen: Distal tergites and sternites with dense lateral patches of outstanding black and iridescent silvery scales; tergites VI and VII with large bristly submedian apical scaleless area. Sternite VIII large, exserted, nearly devoid of scales, but with numerous setae. Genitalia deeply retracted, only dark tips of cerci projecting from sternite VIII.

MALE. Similar to female except for sexual characters. Palpus subequal to proboscis in length; 5-segmented; segments 4 and 5 bent ventrad. Antenna slightly shorter than proboscis; torus enlarged; flagellum strongly plumose. Larger claw of foreleg and midleg toothed. Apical abdominal segments and genitalia bent ventrad. Tergite VIII short, only 0.70-0.78 length of sternite VIII; largely retracted; with only a few apical black scales.

MALE GENITALIA. Tergite IX very poorly developed, short, without lobes; 1 or 2 fine submedian setae on each side. Sidepiece without basal or apical lobes; sternomesal surface without specialized scales. Claspette filament developed, long, simple. Aedeagus subparallel-sided in basal half, bulbous in distal half in dorsal aspect. Proctiger unusually long in dorsal aspect; without the normal dorsal lobe of the basolateral sclerotization.

PUPA. No cephalothoracic hairs elongate. Trumpet short; tracheoid virtually absent. Hair 1-II farther from midline than 1-I. Hair 2-I-VII relatively long and strong;

usually mesocephalad of hair 1 on segments III-V. Hair 5-IV-VI shorter than corresponding tergite. Hair 9-II-VI relatively long and strong, becoming longer on posterior segments; usually cephalad of level of hair 6 on segments II-IV, cephalad or caudad of level of hair 6 on V, caudad of level of hair 6 on VI. Hair 9-VIII relatively far mesad of caudolateral angle of segment. Paddle deeply emarginate; outer margin distad of external buttress and inner margin with long filamentous spicules.

LARVA. Length and width of head subequal. Labial plate subquadrate. Hairs 5,7-C at about level of antennal base. Hairs 5-7-P on separate tubercles. Hair 2-III-V usually mesocephalad of hair 1. Hair 3-VII relatively short, not reaching base of siphon. Hair 12-I absent. Hair 13-VI relatively long, usually double or triple (2-4), laterad and usually caudad of 10-VI. Comb scales large; few (4 or 5); consisting of an elongate to oval plate from which 1 or rarely 2 large unfringed spines and several smaller spines project. Siphon short; without acus. Caudal margin of anal saddle without strong spines. Ventral brush weakly developed; with 5 pairs of hairs from irregular basal boss; hair 4a-X short, multiple.

DISCUSSION. See *papago* below.

Aedes (*Abraedes*) *papago*, n.sp.

Figs. 1,2

TYPES: *Holotype* male (UCLA 550-39) with slides of associated larval and pupal skins and genitalia, Mendoza Canyon, Coyote Mountains, Pima County, Arizona (31°59' N, 111°30' to 111°31' W), elevation about 1070 m, egg obtained from a rothole in a living evergreen oak tree, 28 Dec 1969, L.T. Nielsen [USNM]. *Allotype* female (UCLA 550-33) with slide of associated larval and pupal skins, same data as holotype [USNM]. *Paratypes*: 1 lpM (550-36), 2 lpF (550-37,38), same data as holotype [UCLA]; 1 F, E slope Coyote Mts., Pima Co., Arizona, 3500 ft, 13 Aug 1968, M.L. Noller [ARIZ].

FEMALE. Wing: 3.15 mm. Proboscis: 2.06 mm. Forefemur: 1.65 mm. Abdomen: about 3.2 mm.

Head: Integument dark brown to black. Frontal bristles absent. Orbital bristles 10-13 pairs. Ocular border of broad flat silvery scales. Ornamentation complex, consisting of white median longitudinal line bordered on each side by 3 progressively smaller black patches alternating with 3 progressively smaller white to silver-white patches; posterior portion of submedian black patch usually with some white scales; occiput with narrow curved white scales. Underside of head usually with silver-white scales. Erect scales of vertex largely restricted to anterior portion of submedian dark patch, black, some elongate and narrow, some proclinate; erect scales of occiput numerous, entirely or largely black, moderately long and broad. Clypeus moderate in size, bare. Proboscis scales predominantly black with metallic coppery to green reflections; white speckles in middle portion, especially dorsally. Palpus black scaled with white patch at base of segment 3; white patch covering all of segment 4; usually with white speckles or patch on segment 2. Torus with large dorsomesal patch of broad silvery scales; flagellar segment 1 with mesal line of white scales.

Thorax: Integument largely dark brown to black. Mesonotum with numerous long, strong, dark bristles; humeral, lateral prescutal, posterior fossal, supraalar and parascutellar bristles present. Scutellum with 4-6 well developed bristles on mid-

lobe and 3-7 well developed bristles on lateral lobe. Mesonotal background of small dark brown to black curved scales which become larger and broader laterally and posteriorly. Conspicuous pattern of narrow white or silvery lines as follows: (1) a long para-acrostichal line of narrow white to silver-white scales from anterior promontory to near level of wing root; becoming narrower and slightly converging towards its mate posteriorly, (2) a more or less continuous line of enlarged silvery scales from humeral angle to scutellum via scutal suture and outer posterior dorsocentral line; scales denser in posterior part of line; line not broadened in area of scutal angle, (3) a nearly transverse patch of large silvery scales in front of wing root, (4) a short median acrostichal line of white to silver-white scales from about level of end of para-acrostichal line to prescutellar bare space, (5) a tuft of silver-white scales on anterior promontory, (6) an irregular patch of large silvery scales behind scutal angle, and (7) sometimes enlarged silvery scales in a patch at anterior end of prescutellar bare space or in a narrow lateral prescutellar line. Pleuron with bristles on *apn*, *ppn*, *ppl*, *psp*, *stp*, *pra* and upper *mep*; *ssp* bristles absent. Pleural scales forming a long more or less continuous silvery diagonal line from upper anterior *apn* across lower *ppn*, *ssp* and upper middle *stp* to lower posterior portion of *mep*; additional silvery patches on upper and lower *pst*, *ppl*, upper portion of *pcx*, *pra*, lower posterior *stp* and upper *mep*; longer nearly horizontal silvery line across middle portion of *stp*; *ppn* usually with a few silvery scales, sometimes bare; *psp* and metameron usually without scales.

Legs: Integument of coxae dark brown to black. Coxal bristles normal. All coxae with patches of broad flat silvery scales, as follows: (1) forecoxa with upper and lower anterior patches, (2) midcoxa with small upper posterior, middle anterior and lower anterior patches, (3) hindcoxa usually with large patch from upper portion to middle of anterior surface and small lower anterior and lower posterior patches; forecoxa with black scales between silvery patches. All trochanters with black and white scales. Femora predominantly black scaled on all surfaces of all legs; many black scales, particularly on midfemur and hindfemur, with metallic silvery, light green, blue or violet reflections; forefemur with incomplete narrow subbasal oblique white band and numerous scattered white scales; midfemur and hindfemur with usually complete narrow subbasal oblique white ring and fewer scattered white scales. Knee spots small, usually incomplete on forefemur. Tibiae predominantly black scaled, with slight metallic green, blue or violet reflections; all tibiae with narrow to moderately broad dorsally incomplete basal white band; foretibia and midtibia with narrow white ring or band 0.25-0.33 distance from base; hindtibia with broader white ring 0.45-0.50 distance from base. Tarsi black scaled, with conspicuous white dorsal patches, bands or rings, as follows: (1) foretarsus with moderately broad patch or band at base of segment 1 and smaller patch at base of segment 2 and usually segment 3, (2) midtarsus with moderately broad basal band or ring on segment 1 and small patch at base of segment 2 and sometimes segment 3, and (3) hindtarsus with moderately broad subbasal white band or ring on segment 1, moderately broad basal band or ring on segments 2 and 3 and moderately broad basal patch or band on segments 4 and 5. Claws of all legs subequal in size, small, simple.

Wing: Dark scaled except for a white line in basal 0.16-0.20 of anterior surface of costal vein.

Haltere: Integument light tan. Stem black scaled distally. Knob black and white scaled.

Abdomen: Integument predominantly very light, yellowish white to amber. Sil-

very and, to lesser extent, dark scales with light metallic coppery, green, blue or violet reflections. Tergite I with numerous dark scales dorsally; laterotergite with large patch of silver-white scales. Tergites II-VIII predominantly dark scaled, with lateral basal or subbasal silvery patch followed distally by lateral patch of black scales; scales of lateral patches becoming progressively denser and more outstanding on distal segments; tergites VI and VII with outstanding black scales middorsally; tergite VIII with dense outstanding black scales and long apical setae which project beyond apices of cercal setae. Sternite I bare. Sternites II-IV variably scaled, sometimes largely bare, usually with at least a few dark or black scales apically, sometimes with small lateral subbasal or median silvery patch. Sternites V-VII usually at least partly bare basally, black scaled apically and with lateral median silvery patch; scales becoming progressively denser and more outstanding on distal segments.

MALE. Essentially as in female except for sexual characters.

Head: White speckling of proboscis reduced or absent. Palpal segments 2 and 3 ankylosed, long, making up about 0.67 length of palpus; segment 4 short, about 0.16 length of palpus; segment 5 short, about 0.12 length of palpus; slender except for slightly swollen apex of segment 3; apex of segment 3 and all of segments 4 and 5 with bristles; dark scaled except for conspicuous dorsal white patch or band near base of segment 2 and at base of segments 3-5. Torus with silvery scales dorsomesally; flagellar segment 1 with small scales.

Legs: Anterior foreclaw and midclaw large, with a single long slender subbasal tooth; posterior foreclaw and midclaw medium sized, simple; hindclaws small, simple.

Abdomen: Scaling of sternite VIII similar to tergite VIII of female.

MALE GENITALIA (fig. 1). Unusually colored, segment IX, proctiger, phallosome, claspette and clasper largely very weakly pigmented, yellowish; sidepiece and spiniform more deeply pigmented, light brown; apex of paraproct black.

Segment IX: Tergite without the normal integumentary spicules middorsally. Sternite well developed, long, with numerous strong setae distally.

Sidepiece: Well developed, relatively long and slender, more or less spindle shaped. Mesal surface membranous from base to apex. Basal tergomesal area not swollen, without clumped or enlarged bristles, but with normal bristles of dorsal surface of sidepiece shorter and slightly more numerous. Median sternomesal sclerite not developed. Distal dorsomesal surface with short setae; dorsal surface, distal lateral surface and ventral surface with long bristles. Dorsal surface with dark scales among bristles; basal portion of dorsolateral and lateral surfaces with dense broad silver-white scales with iridescent coppery, green, blue or violet reflections; distal portion of lateral surface with dense broad dark scales.

Claspette: Well developed. Stem moderately long, bent mesally in distal portion in dorsal aspect. Base and all but distal portion of stem spiculose. Mesal and mesoventral surface of stem with 3-6 weakly developed setae. Filament more or less evenly curved dorsally, subterete; without a ridge or retrorse barb on convex side.

Clasper: Simple, moderately long, curved inward distally. Broadest at base, tapering evenly to narrower apex. Dorsal basal portion spiculose. Surface not conspicuously wrinkled. Ventral surface with 2 setae near apex. Apical spiniform moderately long, about 0.30-0.35 length of clasper, slightly curved inward.

Phallosome: Aedeagus moderately long, without teeth. Ventral paramere appearing unusually short and broad in dorsal aspect.

Proctiger: Strongly developed. Paraproct with single large heavily sclerotized

curved apical spine. Cercal setae fine, short, 2-4.

PUPA (fig. 1). Abdomen: about 4.0 mm. Trumpet: 0.54 mm. Paddle: 0.81 mm. Integument very lightly pigmented, uniformly light straw yellow, strongly contrasting with dark trumpet and hairs.

Cephalothorax: All hairs relatively short, stout, darkly pigmented and usually single or double. Hair 6-C usually as stout as or stouter than 7-C.

Trumpet: Dull brown in color except for slightly lighter apex of pinna. Tracheoid represented at extreme base of lateral (ventral) surface only. Index about 3.1-3.3; pinna about 0.22-0.33 of total length.

Metanotum and Abdomen: Integumentary reticulation and spiculation very inconspicuous on anterior segments, becoming slightly more pronounced on posterior segments. Most hairs relatively short, stout, darkly pigmented and single or double. Float hair (1-I) well developed, relatively short, with numerous dendritic branches; lateralmost branches of float hair usually diverging at an angle of less than 100 degrees. Hair 1-II-VII relatively short, usually subequally developed and single or double (1-3) on all segments, but sometimes enlarged and multibranched (5-7) on segment II. Hair 2 usually laterocephalad of hair 1 on segments II, VI, VII. Hair 3-I-III subequal in development, moderately long, single (1 or 2); hair 3-IV-VII subequal in development, usually single on V-VII, single or double on IV. Hair 4-II mesad of 5-II. Hair 5-II,III subequally developed, relatively short, distinctly finer than hair 3 of corresponding segment, usually single (1 or 2); hair 5-IV-VI subequally developed, subequal to or slightly longer than 3-I-III, about 0.7-0.9 length of corresponding tergite, usually single (1 or 2); hair 5-VII similar to 5-II,III or slightly longer and/or stronger, usually double (1 or 2). Hairs 6,7-I much finer and shorter than 3-I. Hair 6-II slightly thickened and elongate, single (1 or 2); hair 6-III-V usually distinctly shorter and finer than 6-II, usually single (1-3); hair 6-VI quite stout and elongate, single; 6-VII usually only slightly longer and stronger than 6-III-V, single. Hair 9-VII long and strong, double or single. Hair 9-VIII most strongly developed and longest hair of pupa, with 2-4 (2-5) primary branches. Hair 10 conspicuously more mesad and cephalad of hair 11 on segment VI than on segment VII.

Paddle: Shape as figured; length 1.30-1.55 of maximum width. Evenly light straw yellow in color. Midrib brighter and deeper yellow in color, extending to highly wrinkled area basad of apical emargination. Hair 1-P relatively long and strong, single.

LARVA (fig. 2). Head: 0.97 mm. Siphon: 0.72 mm. Anal Saddle: 0.28 mm. Strongly developed stellate hairs and conspicuous spicules absent.

Head: Integument smooth. Medium straw yellow in color except for slightly darker anterior portion of ventral surface and much darker collar. Ocular area not lightened. Mental plate normal, brown, with 8 or 9 (8-10) lateral teeth. Hair 1-C very stout, widened before middle, smooth. Hairs 4,6-C relatively far cephalad. Hair 4-C small, with 5-8 branches (4-9), located mesocephalad of hair 6 and mesad of hair 1. Hair 5-C single, laterad of 6-C. Hair 6-C single, usually slightly widened beyond base, slightly laterad of 1-C. Hair 7-C usually triple or double (1-3). Hair 11-C weakly developed, short, stellate, with 3-5 branches. Hair 14-C rather stout, usually triple (2 or 3). Hair 15-C located in anterior 0.25 of labial plate; long, extending beyond apex of mental plate, with 3 or 4 branches.

Antenna: Relatively short. Integument without spicules, but sometimes with conspicuous annular wrinkles. Medium straw yellow in color except for slightly darkened base. Hair 1-A usually single; unusually short, length only 1.5-2.0 diameter

of antennal shaft at insertion of hair; inserted on dorsal or dorsomesal surface of shaft.

Thorax: Living larva white, without conspicuous pigmentation in epidermis or fat body. Integument without spicules. Hairs moderately pigmented. Hairs 1-3-P sometimes arising from a weakly sclerotized common plate. Hair 3-P much shorter and weaker than 1-P. Hair 4-P with 3-5 branches. Hairs 5,7-P long, usually with 4 or 5 branches (2-6), each sometimes with small basal plate. Hair 8-P relatively short, usually with 4-6 branches (3-7). Hair 11-P,M,T short, weak, usually double (1-3), much smaller than 9-P. Hair 1-M shorter than 3-M, with 2-4 branches. Hair 5-M double or single. Hair 14-M short, single to triple. Hairs 1,13-T subequal, small, usually with 2-4 branches (1-4). Hair 4-T usually longer and stronger than 1-T. Hair 5-T small, single to triple.

Abdomen: Coloration and spiculation as for thorax. Most hairs moderately pigmented. Hair 1-I,II subequally developed, moderate, usually with 3 or 4 branches (2-7); hair 1-III-V subequally developed, slightly longer than 1-I,II, with 3 or 4 branches; 1-VI,VII subequally developed, longer than 1-III-V, usually with 3 or 4 branches (3-5). Hair 2-I-VII relatively stout, usually triple (2 or 3) on I,II, usually single or double (1-3) on III-V, single on VI,VII; usually located laterocephalad of hair 1 on I,II,VI and VII. Hair 5-I-VII subequally developed, moderate, similar to 1-III-V, usually with 3 or 4 branches (2-6). Hairs 6,7-I with separate basal plates. Hair 6-I-V long, double or triple on I,II, double on III-V; hair 6-VI shorter, single or double. Hair 7-I long, 7-II-VI usually becoming progressively shorter; usually double (1 or 2) on I, double or triple (1-3) on II-VI. Hair 11-I moderately developed, usually with 4-7 branches (3-8). Hair 13-I relatively small, usually with 3 or 4 branches (1-4); hair 13-II larger, subequal to 11-I, usually double or triple (1-3); hair 13-III-V subequally developed, long, much longer than hair 1 of corresponding segment, usually triple (2-4).

Segment VIII: Integument smooth except for rows of inconspicuous spicules in area of comb scales. Hair 1-VIII moderately developed, usually with 4 or 5 branches (3-5), frequently arising from a small basal plate. Hair 3-VIII large, usually with 6 or 7 branches (5-8), arising from basal plate.

Siphon: Short, index apparently about 1.9-2.3 (determined from skins). Light yellow brown to light brown in color except for darker base, especially dorsally, and apex. Integument smooth to very weakly and indistinctly imbricate. Basal margin of siphon irregular and wavy. Pecten teeth moderate in size; usually 12-14 (12-18); brown except for hyaline apex; usually with 2-4 basal denticles. Pecten in straight, slightly curved or slightly sinuous row in basal 0.32-0.42 of siphon; often 1 or more of the basal teeth displaced dorsad or ventrad of row; no apical teeth detached. Hair 1-S arising beyond pecten row, about 0.38-0.52 distance from base; moderately developed, usually triple or double.

Anal Segment: Saddle moderate in size, extending to or slightly beyond middle of segment; ventral edge frequently irregular; more or less concolorous with siphon; integument smooth to weakly imbricate on body of saddle, slightly spiculate near distal margin dorsolaterally. Hair 1-X arising on saddle near apicoventral angle; strongly developed, relatively long, usually triple or double (1-4). Hair 2-X long, usually with 3 or 4 branches (3-7). Hair 3-X very long, single. Hair 4a-X short, usually with 4 or 5 branches (4-6); hairs 4b,c-X long, double or single; 4d-X moderately long, single; 4e-X short, double or single. Dorsal and ventral gills subequal in length, very long, at least 3.0-4.2 length of anal saddle (determined from skins); sausage-shaped; gills contiguous in living larva until shortly before pu-

pation, when they become spreading.

SYSTEMATICS. This species is one of the most remarkable container breeding *Aedes* of the New World. The adult characters, in particular, are very striking. The diagnostic features of all stages are set forth above in the subgeneric description.

This species shows no obvious relationships to any other. It is apparently another one of the many unusual New World container breeding *Aedes*, most of which are currently placed, incorrectly in my opinion, in the subgenus *Finlaya*. The resemblance to the Old World subgenus *Stegomyia* is superficial only.

The living larva is white, rather elongate and is easily distinguished from others found in treeholes in southeastern Arizona by the apposition of its 4 long anal gills. The living pupa is macroscopically separated from others of the area by its weak movements and by the dark trumpets and float hairs which contrast strongly with its very light integument.

The only striking variation observed in any stage of the small series of specimens available is the development of abdominal hair 1-II of the pupa. This hair is usually short, single or double and developed similarly to 1-III-VII, but on both sides of 1 specimen and on 1 side of another, the hair is enlarged and has 5 to 7 branches.

BIONOMICS. The original adult female of *papago* was caught while attempting to bite. The larvae apparently occur in treeholes. The reared specimens were hatched from eggs unknowingly collected along with a relatively small amount of water and organic sludge from a small rothole in a living evergreen oak tree (*Quercus*). The nature of the treehole prevented scraping the cavity or collecting large pieces of debris in a deliberate attempt to obtain aedine eggs. Only a single young instar *Orthopodomyia* larva, presumably *kummi*, was present in the water at the time of collection. Upon arrival at the laboratory in Los Angeles the water from the rothole was placed into an enamel pan and diluted with tap water. A few aedine larvae appeared within the next few days, but all of them and the *Orthopodomyia* larva died when oil from an overhead refrigerating unit dripped into the pan. The pan was moved to a more favorable position in the rearing room and the water evaporated. After the debris had been dry for 7-10 days the pan was filled with distilled water. Several eggs hatched within the next 1 or 2 days. Most of the larvae, an undescribed species in the *Aedes kompi* group, matured rapidly. When the unusual attitude of its long gills was noticed macroscopically, the 1 slow-growing larva was examined microscopically and determined to be an unknown species. This was the first larva of *papago*. The debris was permitted to dry again and, after several days, was reflooded with distilled water and subjected to a vacuum of 20-25 inches of mercury for 30 minutes. Several additional eggs hatched; again, most larvae were the undescribed species near *kompi*, but 1 was *Aedes (Kompia) purpureipes*. After these larvae were reared, the debris was dried, reflooded with distilled water and subjected to the vacuum treatment 3 times in close succession without any additional hatch. Following this series of floodings the debris was left dry for 6 or 7 weeks. It was then flooded and subjected to the same vacuum treatment as before. Quite unexpectedly, numerous *Aedes* eggs hatched; among the larvae were more or less equal numbers of *purpureipes* and the undescribed species near *kompi* and fewer of *papago*. Four of the latter were successfully reared. As before, these larvae matured much more slowly than the accompanying species. The debris has been subjected to 1 additional drying and reflooding but no additional eggs hatched.

The oak bearing the rothole from which *papago* was collected was growing in

a small lateral canyon formed along a fault in the north-facing wall of Mendoza Canyon. This oak was at an elevation near that of the main canyon bottom and was one of the lowest in the area. Since no specimens of *papago* were obtained in numerous collections of debris and water made from oaks higher on the canyon walls, the species may be restricted to the lower edges of the xeric evergreen forest. If so, this may explain why it has not been found earlier, for there is a tendency, at least on my part, when looking for mosquitoes, to go to higher elevations where oaks and other trees are more numerous and more easily accessible. The relatively long larval life may also restrict the number of treeholes suitable for breeding of this species.

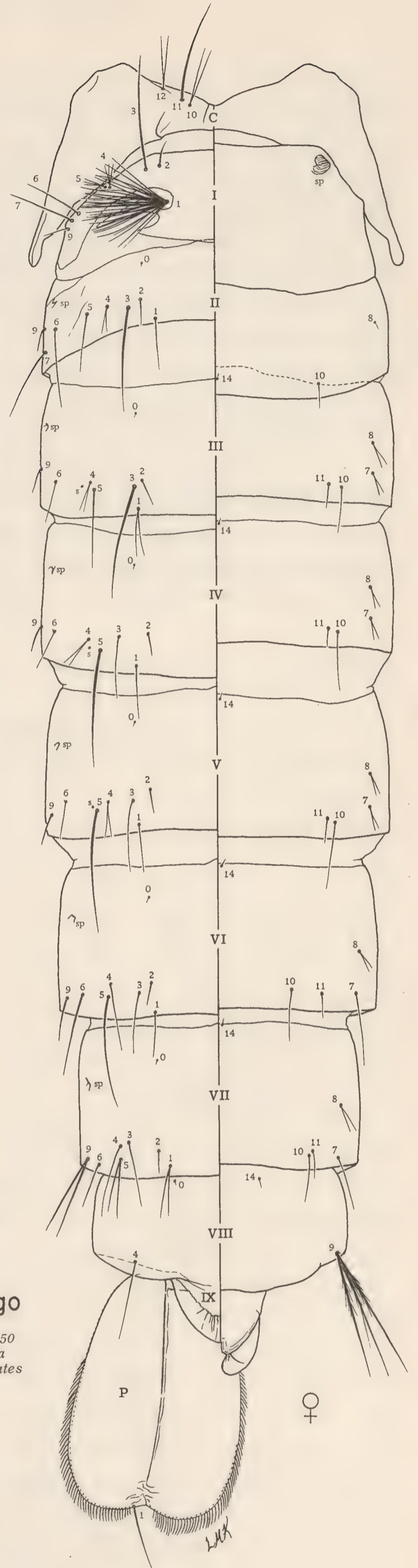
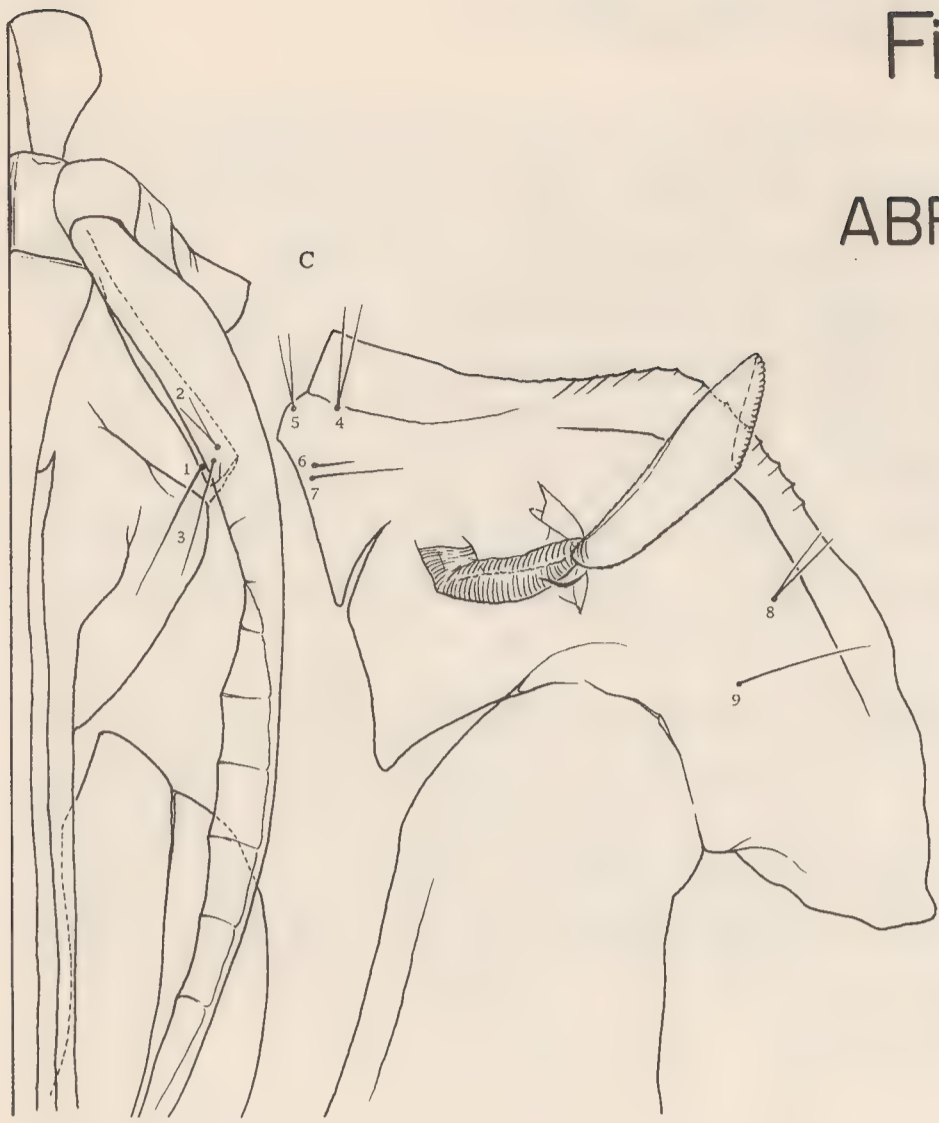
DISTRIBUTION. At present *papago* is known from only Mendoza Canyon, Coyote Mountains, Arizona. It undoubtedly occurs in northwestern Mexico and could be more widespread in southeastern Arizona where it may have been overlooked because few attempts have been made to collect treehole mosquitoes at elevations as low as 1100 m, the approximate elevation of Mendoza Canyon. All material examined is listed above in the type series.

FIGURES

1. *Aedes (Abraedes) papago*; male genitalia and pupa
2. *Aedes (Abraedes) papago*; larva

Fig. I

ABRAEDES



papago

UCLA 550
Arizona
United States

♀

L.H.

Fig. 2
ABRAEDES

